

REMARKS

In section 2 of the Office Action, the Examiner rejected finally claims 1, 3-6, 11, 12, and 31-33 under 35 U.S.C §102(b) as being anticipated by the Torok patent.

Applicant's Argument - The Torok patent discloses in Figure 3a a transpinnor 300 in which four magnetoresistors 302 are arranged in a bridge with a conductor 304 wound through the GMR films 302 as shown. The input of the transpinnor 300 is provided to terminals 306 and 308 and is completely isolated resistively from the output between nodes 310 and 312.

The Torok patent discloses in Figure 5 a transpinnor 500 having an open-flux configuration. The transpinnor 500 is substantially the same schematically as the transpinnor 300. Thus, magnetoresistors 502, 504, 506, and 508 form a bridge. An input conductor 510 is wound as a single layer of magnet wire.

Independent claim 1 is directed to an integrated signal isolator having first and second ends and comprising first and second isolator input terminals to receive a signal to be isolated, first and second isolator output terminals to provide an isolated output signal, first and second power supply terminals, first,

second, third, and fourth magnetoresistors, and an input strap. The first and second magnetoresistors are coupled to the first isolator output terminal, the second and third magnetoresistors are coupled to the first supply terminal, the third and fourth magnetoresistors are coupled to the second isolator output terminal, and the first and fourth magnetoresistors are coupled to the second supply terminal. The input strap has at least one turn coupled between the first and second isolator input terminals, and the input strap is disposed with respect to the first, second, third, and fourth magnetoresistors so that a magnetic field is generated over the first and second magnetoresistors in one direction, and so that a magnetic field is generated over the third and fourth magnetoresistors in an opposite direction.

The Torok patent does not show an input strap that is disposed with respect to first, second, third, and fourth magnetoresistors so that a magnetic field is generated over the first and second magnetoresistors in one direction, and so that a magnetic field is generated over the third and fourth magnetoresistors in an opposite direction.

More particularly, the Examiner first states that independent claim 1 reads on Figure 3a of the Torok

patent. However, it does not. Independent claim 1 requires a particular relationship between the magnetoresistors 302 of the Torok patent and the input and output terminals.

For example, if it is assumed that the magnetoresistor 302 coupled between line 310 and B- is the second magnetoresistor of independent claim 1, the magnetoresistor 302 coupled between line 310 and B+ is the first magnetoresistor of independent claim 1, the magnetoresistor 302 coupled between line 312 and B+ is the fourth magnetoresistor of independent claim 1, and the magnetoresistor 302 coupled between line 312 and B- is the third magnetoresistor of independent claim 1.

The input coil 304 is wound around these GMR films so that a current through the input coil 304 produces a magnetic field over the first and second magnetoresistors in opposite directions. However, independent claim 1 requires that a current through the input strap produce a magnetic field over the first and second magnetoresistors in the same direction. This analysis works whichever magnetoresistor is designated as the second magnetoresistor. Therefore, independent claim 1 cannot be read on Figure 3a of the Torok patent.

The Examiner also states that independent claim 1 reads on Figure 5 of the Torok patent. However, it does not. Independent claim 1 requires a particular relationship between the magnetoresistors 502-504 and the input and output terminals. For example, if it is assumed that the magnetoresistor 502 is the first magnetoresistor of independent claim 1, the magnetoresistor 508 is the second magnetoresistor of independent claim 1, the magnetoresistor 504 is the third magnetoresistor of independent claim 1, and the magnetoresistor 506 is the fourth magnetoresistor of independent claim 1.

The input coil 510 is wound around these GMR films so that a current through the input coil 510 produces a magnetic field over the first and second magnetoresistor 502 and 508 in opposite directions. However, independent claim 1 requires that a current through the input strap produce a magnetic field over the first and second magnetoresistors in the same direction. Therefore, independent claim 1 cannot be read on Figure 5 of the Torok patent.

Therefore, whether Figure 3a or Figure 5 is used, independent claim 1 is not anticipated by the Torok patent.

Independent claim 11 is directed to an integrated signal isolator having first and second ends, the integrated signal isolator comprising first, second, third, and fourth magnetoresistors, and an input strap. The first and second magnetoresistors are coupled to a first isolator output terminal, the second and third magnetoresistors are coupled to a first supply terminal, the third and fourth magnetoresistors are coupled to a second isolator output terminal, and the first and fourth magnetoresistors are coupled to a second supply terminal. The input strap has at least one turn coupled between first and second isolator input terminals. The at least one turn has a first portion extending between the first and second ends and running lengthwise alongside only the first and second magnetoresistors and a second portion extending between the first and second ends and running lengthwise alongside only the third and fourth magnetoresistors. The at least one turn is arranged so that current supplied to the input strap flows through the first portion in a first direction between the first and second ends and through the second portion in a second direction between the first and second ends, and the first and second directions are substantially opposite to one another.

As can be seen from Figure 3a of the Torok patent, the input coil 304 runs across all four GMR films in both directions. Thus, the input coil 304 does not have a first portion running along only the first and second magnetoresistors and a second portion running along only the third and fourth magnetoresistors,.

Moreover, the input coil 304 does not have a first portion that runs lengthwise alongside two of the GMR films and a second portion that runs lengthwise alongside the other two of the GMR films.

As can be seen from Figure 5 of the Torok patent, the input coil 510 runs across all four GMR films in both directions. Thus, the input coil 510 does not run lengthwise alongside any of the GMR films.

Also, the input coil 510 does not have a first portion that runs along only two of the GMR films and a second portion that runs along only the other two of the GMR films.

Therefore, whether Figure 3a or Figure 5 is used, independent claim 11 is not anticipated by the Torok patent.

The Examiner's Response: Independent Claim 1 -

In section 8 of the Office Action, the Examiner argues that the magnetoresistors disclosed in the Torok patent

may be arbitrarily assigned the first, second, third, and fourth nomenclatures used in independent claim 1.

Applicant's Rebuttal: Independent Claim 1 - The Examiner's assertion is not true. Once one of the magnetoresistors disclosed in the Torok patent is designated as the first, second, third, or fourth magnetoresistor, independent claim 1 defines the manner in which the remaining three magnetoresistors must be designated according to independent claim 1.

For example, let it be assumed that the left most magnetoresistor 302 in Figure 3a of the Torok patent is the first magnetoresistor of independent claim 1. Then, independent claim 1 requires the output terminal 310 to be the first output terminal and the supply terminal B- to be the second supply terminal.

Independent claim 1 then recites that the second magnetoresistor is also coupled to the first isolator output terminal 310. This recitation means that the second magnetoresistor must be the left middle magnetoresistor shown in Figure 3a of the Torok patent because the other two magnetoresistors are not coupled to the first output terminal 310.

Similarly, independent claim 1 recites that the fourth magnetoresistor is coupled to the second supply

terminal B-. The only other magnetoresistor connected to the second supply terminal B- is the right most magnetoresistor shown in Figure 3a. Therefore, the right most magnetoresistor shown in Figure 3a is the fourth magnetoresistor of independent claim 1.

Finally, the right middle magnetoresistor shown in Figure 3a is the third magnetoresistor of independent claim 1 because it is the only magnetoresistor left.

In summary, assuming the left most magnetoresistor shown in Figure 3a is the first magnetoresistor of independent claim 1, then the second magnetoresistor is the left middle magnetoresistor of Figure 3a, the third magnetoresistor is the right middle magnetoresistor of Figure 3a, and the fourth magnetoresistor is the left most magnetoresistor of Figure 3a.

As can be seen by the way the coil 304 is wound around these magnetoresistors, the field that is produced by current through the coil is generated over the first and second magnetoresistors in opposite directions, contrary to the requirements of independent claim 1.

Indeed, whichever magnetoresistor in Figure 3a or 5 of the Torok patent is assumed to be the first magnetoresistor, independent claim 1 then requires a

relationship between that magnetoresistor and the other three magnetoresistors such that the field that is produced by current through the coil is generated over the first and second magnetoresistors in opposite directions, contrary to the requirements of independent claim 1.

Therefore, independent claim 1 is not anticipated by the Torok patent.

The Examiner's Response: Independent Claim 11 -

In section 8 of the Office Action, the Examiner argues essentially that a first portion of the coil 304 can be an upper portion that runs along only the left most and left middle magnetoresistors and a second portion of the coil 304 can be a lower portion that runs along only the right middle and right most magnetoresistors. Therefore, current supplied to the coil 304 would flow through the first portion in a first direction and through the second portion in a second direction as recited in independent claim 1.

Applicant's Rebuttal: Independent Claim 11 -

The Examiner's argument is not valid because the Examiner has ignored the language of independent claim 11 that requires the current supplied to the coil to flow through the first portion in a first direction between the first

and second ends of the isolator. For the current to flow through the first portion between the first and second ends of the isolator, the first portion must stretch between the first and second ends of the isolator. Such is not the case in the apparatus disclosed in the Torok patent.

The amendments to independent claim 11 to the effect that the portions extend between the first and second ends of the isolator has resulted in no change in scope but merely underscore the requirement that the first and second portions of the input strap extend between the first and second ends of the isolator.

Moreover, the Examiner has also ignored the language of independent claim 11 that requires the first portion to run along the first and second magnetoresistors and the second portion to run along the third and fourth magnetoresistors. The coils 304 and 510 as shown in the Torok patent run across the magnetoresistors, not along the magnetoresistors.

The amendments to independent claim 11 to the effect that the portions run lengthwise along the magnetoresistors also has resulted in no change in scope but merely underscore the requirement that the first and

second portions of the input strap run along and not across the magnetoresistors.

Accordingly, for all of the reasons given above, the Torok patent does not anticipate independent claims 1 and 11 and dependent claims 3-6, 11, 12, and 31-33.

In section 3 of the Office Action, the Examiner rejected claims 1, 3-17, and 32-35 under 35 U.S.C. §102(b) as being anticipated by the Wan patent.

Applicant's Argument - The Wan patent discloses a first magnetoresistor 24, a second magnetoresistor 26, a third magnetoresistor 30, and a fourth magnetoresistor 28 forming a Wheatstone bridge. The Wheatstone bridge is fed by a source between an input terminal pad 44 and an input terminal 40/48, and has output terminals 36 and 52. An input strap 70 produces a magnetic field over the first, second, third, and fourth magnetoresistors 24, 26, 30, and 28 in the same direction.

Independent claim 1 - The input strap 70 is not disposed as required by independent claim 1. That is, the input strap 70 is not disposed with respect to the first, second, third, and fourth magnetoresistors 24, 26, 28, and 30 so that a magnetic field is generated over the first and second magnetoresistors 24 and 26 in one

direction, and so that a magnetic field is generated over the third and fourth magnetoresistors 30 and 28 in an opposite direction.

Instead, current flowing through the input strap 70, depending on polarity, enters the input strap 70 at the pad 66 and exits the input strap 70 at the pad 68. Accordingly, the current flows along the first, second, third, and fourth magnetoresistors 24, 26, 30, and 28 in the same direction producing a magnetic field over all of the first, second, third, and fourth magnetoresistors 24, 26, 30, and 28 in the same direction.

As a result, the Examiner points to the set/reset strap 54 of the Wan patent as the input strap of independent claim 1. The Wan patent refers to Pant, U.S. Pat. No. 5,247,278 in describing the set-reset function. As described in the Pant '278 patent, a set-reset strap is used to set the direction of magnetization in magnetoresistors so as to eliminate any offset that might otherwise result. The duration of the current in set-reset strap is very short, less than a microsecond.

As can be seen, the Wan patent does not suggest that the set-reset strap 54 can be used as an input strap coupled between first and second isolator input terminals

so that circuits can be isolated from one another. Indeed, the Wan patent suggests just the opposite. Thus, those practicing in the art of magnetoresistive isolators will understand that a set-reset strap is not an input strap.

Additionally, the only time that the Wan patent uses the term "input" is in relation to the input strap 70. The Wan patent does not use the term "input" in relation to the set/reset strap 54.

Moreover, calling an elephant a lion does not make the elephant a lion. Similarly, calling the set/reset strap 54 an input strap does not, to one skilled in the art, make the set/reset strap 54 the input strap recited in independent claim 1.

Furthermore, the set-reset strap 54 of the Wan patent does not receive a signal to be isolated as required by independent claim 1. Therefore, the set-reset strap 54 of the Wan patent cannot be used to meet the input strap recitation of independent claim 1.

The Examiner argues that the set-reset strap 54 can function as an input strap. The Examiner is not correct. The set-reset strap 54 cannot be used as the input strap of a signal isolator. The Examiner's

attention is directed to the previously submitted Declaration.

The Examiner also argues that applicant admitted at page 30 of the brief that the set-reset strap 54 of the Wan patent can be used as an input strap. This argument likewise is not correct. Applicant only meant that the Examiner built an argument (albeit incorrectly) through an improper use of applicant's own disclosure.

The Examiner further argues that the set-reset strap 54 can be an input strap because any signal on the set-reset strap will produce an output from the magnetoresistors. However, this argument would not be made by a person skilled in the art because that person would not consider the input strap 70 to be a set-reset strap and would not consider the set-reset 54 to be an input strap of a signal isolator.

Moreover, as discussed above, using the input strap 70 as a set-reset strap and using the set-reset strap 54 as an input strap would not produce a useful signal isolator, making the Examiner's interpretation of the Wan patent vis-à-vis independent claim 1 spurious.

Additionally, the Examiner refers to the Pant '278 patent as proof that the set-reset strap 54 can be used as the input coil of a signal isolator. However,

the conductor 60 is merely described in the Pant '278 patent as a the set-reset conductor strap and is not used an input strap to receive a signal to be isolated.

Furthermore, the Examiner asserts that there is no structural difference between independent claim 1 and the Wan patent. The Examiner is incorrect. The input strap 70 as disclosed in the Wan patent does not produce the fields as recited in independent claim 1, and the set-reset strap 54 is not an input strap that is coupled to an input terminal that receives a signal to be isolated.

Accordingly, because the input strap 70 disclosed in the Wan patent does not meet the limitations of independent claim 1, and because the set-reset strap 54 disclosed in the Wan patent is not an input strap that is coupled between first and second isolator input terminals of an integrated signal isolator, the Wan patent does not anticipate independent claim 1 and dependent claims 3-10.

Independent claim 11 - The Wan patent does not disclose the relationship between the input strap 70 and the magnetoresistors 24, 26, 28, and 30 as recited in independent claim 11. That is, the input strap 70 does not have a first portion of the input strap 70 that runs

along the first and second magnetoresistors 24 and 26 and a second portion that runs along the third and fourth magnetoresistors 30 and 28.

The Examiner, however, argues that the set/reset strap 54 disclosed in the Wan patent meets these limitations. However, the set-reset strap 54 does not have any portions that run along any of the magnetoresistors 24, 26, 28, and 30.

Moreover, as discussed above, the set-reset strap 54 does not meet the input strap limitation. That is, the Wan patent does suggest that the set-reset strap 54 can be coupled between first and second isolator input terminals of an integrated signal isolator for the purpose of isolating circuits from one another. However, those practicing in the art of magnetoresistive isolators will understand that a set/reset strap is not an input strap and cannot be used as an input strap.

Additionally, the only time that the Wan patent uses the term "input" is in relation to the input strap 70. The Wan patent does not use the term "input" in relation to the set/reset strap 54.

Moreover, calling a set-reset strap an input strap does not make the set-reset strap an input strap.

The Examiner's Response: Independent Claim 1 -

In section 9 of the Office Action, the Examiner argues (i) that, because a signal on the set-reset strap 54 disclosed in the Wan patent will produce an output across the output terminals, and because the signal isolator as recited in independent claim 1 may be broadly interpreted by the Examiner, the set-reset strap 54 can be used as the input of a signal isolator, (ii) that applicant's argument about the usefulness of using the set-reset strap 54 as the input for a signal to be isolated depends on the term "useful", and is another admission that the set-reset strap 54 provides isolation, (iii) that the Pant '278 patent provides evidence that the set-reset strap 54 can be used as the input to receive the signal to be isolated, (iv) that, in this connection, applicant and Declarant ignore the discussion in the Pant '590 patent of using a set-reset strap to isolate an input signal from a circuit, (v) that the Declaration provides no factual support, (vi) that isolator is a broad term and that Declarant fails to address the broad interpretation by the Examiner, (vii) that the Wan patent and the Pant '278 patent indicate that there are two separate bridge outputs for two opposite DC inputs to the set-reset strap 54 disclosed in the Wan patent, (viii)

that applicant fails to point to any structural difference between the input strap of the claim and the set-reset strap 54 of the Wan patent, and (ix) that claiming opposite fields in two of the four magnetoresistors creates no structural distinction.

Applicant's Rebuttal: Independent Claim 1 - The Examiner uses an overly broad definition of signal isolator with respect to the Examiner's argument (i).

As indicated by the previously submitted Declaration, if a person skilled in the art were to attempt to use the apparatus disclosed in the Wan patent as a signal isolator, that person would not use the set-reset strap 54 to receive the signal to be isolated. The issue is not whether a signal on the set-reset 54 produces an output across the output terminals. Rather, the issue is what a person skilled in the art would understand from the Wan patent. As should be evident from the Declaration, the person skilled in the art would not use the set-reset strap 54 of the Wan patent to receive the signal to be isolated.

As indicated by the Wan patent, the Pant '78 patent, and the Declaration previously submitted, the set-reset strap 54 performs the set-reset function, not the input function of a signal isolator. As recited in

independent claim 1, the input coil of the signal isolator receives the signal to be isolated. The set-reset strap 54 does not receive an input to be isolated.

Column 3, lines 28-45 of the Wan patent do not state otherwise. Indeed, this portion of the Wan patent merely discloses the function of a set-reset strap. The set-reset function sets and resets the magnetization direction of the magnetoresistors. Column 3, lines 28-45 of the Wan patent merely describe how the magnetization direction reacts to the direction of current flow through the set-reset strap 54. Column 3, lines 28-45 of the Wan patent do not state or even suggest to one skilled in the art that a signal to be isolated can be coupled to the set-reset strap 54.

The Examiner also states that column 3, lines 28-45 of the Wan patent define a signal isolator. As should be clear from the above discussion and from the Declaration, this portion of the Wan patent does not define a signal isolator. It merely defines a set-reset strap.

The Examiner further argues that a change in current to set/reset strap 54 of the Wan patent changes the field in the magnetoresistors, thereby changing the bridge output, and that any such strap may be used as the

input strap of a signal isolator in the broad sense of the term as long as a change in current supplied to the strap results in a change in the output of the signal isolator. However, as the Declaration states, one skilled in the art would not so understand. Indeed, there is a reason that neither the Wan patent nor the Pant patent discloses that the set-reset strap can be used as an input strap.

As can be seen, the Examiner is improperly applying the Wan patent to independent claim 1 because the Wan patent would not be understood by one skilled in the art to disclose or suggest that the set-reset strap 54 can be used to receive the signal to be isolated.

With respect to argument (ii), the Examiner asserts that applicant's argument regarding usefulness depends on the term "useful," and is tantamount to an admission that the set-reset strap 54 and the magnetoresistors may be used as an isolator.

In response, applicant points out that, if one skilled in the art would not use the set-reset coil 54 of the Wan patent as the input of a signal isolator, then the Wan patent has not disclosed a signal isolator using the set-reset strap 54 as the input coil to receive the signal to be isolated.

Further, applicant cannot understand how an argument to the effect that the set-reset strap 54 of the Wan patent cannot be used as an input coil of a signal isolator to receive the signal to be isolated can be an admission that the set-reset strap 54 of the Wan patent can be used as an input coil of a signal isolator.

With respect to argument (iii), the Examiner asserts that the Pant '278 patent provides evidence that the set-reset strap 54 of the Wan patent can be used to receive a signal to be isolated, pointing to the top of column 5 of the Pant '278 patent.

This portion of the Pant '278 patent discloses that the set-reset strap 60 can be used during a measurement of a magnetic field to eliminate offset. Thus, the Pant '278 patent discloses the normal operation and use of a set-reset strap. The Pant '278 patent does not disclose that a set-reset strap can be used as the input coil of a signal isolator to receive the signal to be isolated. Indeed, the Pant '278 patent discloses in this same section that the set-reset strap is used for short time intervals. The input of a signal isolator cannot be used for short intervals. It must be available to provide the isolation function.

With respect to argument (iv), the Examiner asserts that applicant and Declarant ignore the discussion in the Pant '590 patent that relates to the use of set-reset strap to eliminate offset and that the elimination of offset is an output. Applicant and Declarant have not. Simply put, as the Declaration indicates, one skilled in the art would not use the set-reset strap disclosed in the Wan patent, in the Pant '278 patent, in the Pant '590 patent, and in the present application as the input strap recited in independent claim 1. Therefore, one skilled in the art would not view the Wan patent or the Pant '590 patent as teaching the invention of independent claim 1.

With respect to argument (v), the Examiner asserts that the Declaration provides no factual support for Applicant's argument regarding the use of a set-reset strap as the input strap of independent claim 1, that the Declaration ignores the statements by the Examiner and evidence in Wan that a current at the set-reset strap provides an output in the bridge, and that, therefore, the apparatus disclosed in the Wan patent would be useful as a signal isolator to isolate a DC signal at the input of the set-reset strap 54 from an output signal.

First, the Declaration is factual, at least insofar as it establishes what one skilled in the art would understand from the disclosure in the Wan patent. The Declaration supports applicant's argument that one skilled in the art would not understand the Wan patent to disclose a signal isolator according to the contentions of the Examiner because one skilled in the art would not use the set-reset strap 54 of the Wan patent as the input strap recited in independent claim 1. Even if the set-reset strap is used to condition the output vs. input relationship produced by a magnetoresistor bridge, the skilled artisan would not use the apparatus disclosed in the Wan patent as suggested by the Examiner, as evidenced by the Declaration.

Moreover, the Examiner acknowledges that the set/reset strap of the Wan patent might not do what an input strap as disclosed by applicant can do. The Examiner goes on to assert that independent claim 1 does not recite what an input strap does that differentiates it over a set-reset strap. However, independent claim 1 does.

Independent claim 1 recites that the input strap is coupled between the first and second isolator input terminals which receive a signal to be isolated.

The set-reset strap 54 disclosed in the Wan patent is not coupled between first and second isolator input terminals which receive a signal to be isolated. Instead, as one skilled in the art would recognize, the set-reset strap 54 receives a signal that sets and resets the magnetization direction of magnetoresistors.

With respect to argument (vi), the Examiner asserts that isolator is a broad term and that Declarant fails to address the Examiner's broad interpretation of independent claim 1 in this regard. However, isolator is not as broad a term as the Examiner contends. Those skilled in the will understand that the isolator recited in independent claim 1 is specific to a device that is used to isolate two circuits from one another. An isolator is frequently used to separate two circuits that operate at different potentials. One skilled in the art would not use the set-reset strap 54 disclosed in the Wan patent as the input of a signal isolator to isolate two circuits from one another.

With respect to argument (vii), the Examiner asserts that the Wan patent and the Pant '278 patent indicate that there are two separate bridge outputs for two opposite DC inputs to the set-reset strap 54 disclosed in the Wan patent. The Wan patent and the Pant

'278 patent disclose no such thing. In this regard, the Wan patent and the Pant '278 patent merely show how the magnetization directions of the magnetoresistors are affected by the polarity of the set-reset signal supplied to the set-reset strap 54.

With respect to argument (viii), the Examiner asserts that applicant fails to point to any structural difference between the input strap of independent claim 1 and the set-reset strap 54 of the Wan patent. However, independent claim 1 recites first and second isolator input terminals to receive a signal to be isolated and an input strap having at least one turn coupled between the first and second isolator input terminals. These are structural limitations. The set-reset strap 54 of the Wan patent cannot meet this limitation because it is not coupled to the input terminals that receive a signal to be isolated. Moreover, one skilled in the art would not understand that the set-reset strap 54 could be coupled to input terminals that receive a signal to be isolated.

With respect to argument (ix), the Examiner asserts that claiming opposite fields in two of the four magnetoresistors creates no structural distinction. However, this assertion is not correct. Independent claim 1 recites the direction of the fields in regard to

the disposition of the input strap. That is, the input strap is disposed so that a magnetic field is generated over the first and second magnetoresistors in one direction and so that a magnetic field is generated over the third and fourth magnetoresistors in an opposite direction. According, the field direction language is a structural limitation regarding how the input strap is disposed with respect to the magnetoresistors.

The Examiner's Response: Independent Claim 11 -

In section 9 of the Office Action, the Examiner further argues that the terms "alongside" and "portions" are broad limitations that do not distinguish independent claim 1 over the Wan patent.

Applicant's Rebuttal: Independent Claim 11 -

These terms are not as broad as the Examiner asserts. The set-reset strap 54 disclosed in the Wan patent do not run along the magnetoresistors. Instead, the set-reset strap 54 disclosed in the Wan patent runs across the magnetoresistors. Moreover, the Wan patent does not disclose portions that carry current between the ends of the isolator.

Accordingly, for all of the reasons given above, the Wan patent does not anticipate independent

claims 1 and 11 and dependent claims 2-10, 12-17, and 32-35.

In section 4 of the Office Action, the Examiner rejected claims 1, 3-5, 11-15, 31-33, and 36 under 35 U.S.C. §102(b) as being anticipated by the Pant '590 patent.

The Pant '590 patent discloses a magnetic field sensor 10 having magnetoresistors 120 and 122 and a conductor 134 formed as a single chip 140. Figure 3c is a sectional view of the magnetic field sensor 10 taken perpendicular to magnetoresistor 124. A current passing through the magnetoresistors 120 and 122 biases them at the linear part of their response to an external magnetic field. The conductor 134 performs the set-reset function. The magnetoresistors elements 120 and 122 are connected in a bridge with non-magnetoresistive resistors 121 and 123.

As can be seen, the Pant '590 patent does not disclose a signal isolator having first, second, third, and fourth magnetoresistors. Therefore, the Pant '590 patent cannot anticipate independent claims 1, 11, and 36.

Because independent claims 1 and 11 are not anticipated by the Pant '590 patent, dependent claims 2-

5, 11-15, and 31-33 are likewise not anticipated by the Pant '590 patent.

In section 6 of the Office Action, the Examiner rejected dependent claims 7-10, 14-17, 34-36 under 35 U.S.C. §103(a) as being obvious over the Torok patent in view of the Wan patent. However, because the Torok patent and the Wan patent do not disclose the inventions of independent claims 1, 11, and 36, dependent claims 7-10, 14-17, 34-36 under 35 U.S.C. §103(a) cannot be obvious over the Torok patent in view of the Wan patent.

In section 7 of the Office Action, the Examiner rejected dependent claims 7, 8, 10, 14, 15, 17, 34, and 35 under 35 U.S.C. §103(a) as being obvious over the Torok patent in view of the Pant '278 patent. However, because the Torok patent and the Pant '278 patent do not disclose the inventions of independent claims 1 and 11, dependent claims 7, 8, 10, 14, 15, 17, 34, and 35 under 35 U.S.C. §103(a) cannot be obvious over the Torok patent in view of the Pant '278 patent.

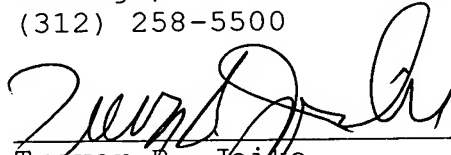
CONCLUSION

In view of the above, it is clear that the claims of the present application patentably distinguish over the art applied by the Examiner. Accordingly, allowance of these claims and issuance of the above captioned patent application are respectfully requested.

Respectfully submitted,

Schiff Hardin LLP
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
(312) 258-5500

By:


Trevor B. Jojke
Reg. No: 25,542

August 3, 2004